

C 6 SCIENTIFIC PUBLICATIONS AND PERFORMANCE

The transition towards a knowledge society is accompanied by significant changes in an economy's structures. The stock of intangible knowledge and innovative products and services in the knowledge-based industry sectors often provides the decisive growth stimulus for a country's economy.⁴⁰¹

The continuous generation of new knowledge particularly depends on the performance of the respective research and science system. With the help of bibliometrics, this performance is largely measurable now.⁴⁰² To put it simply, bibliometrics determine the performance of a country, institution, or even a single scientist, on the basis of publications in scientific journals. The perception and relevance of these publications for other scientists, and thus often enough also their quality, are measured by the number of citations.

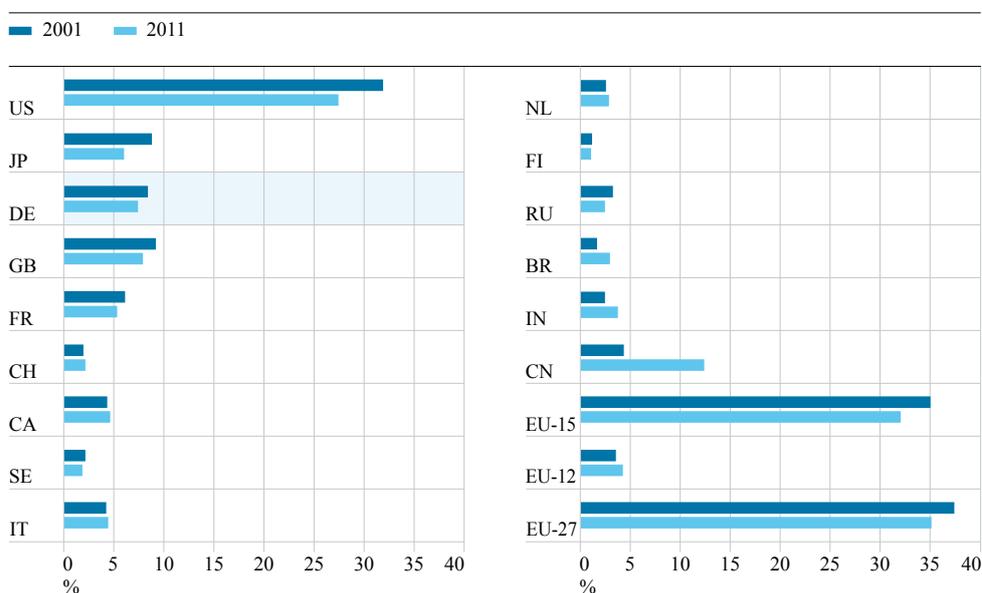
Here, the shares of numerous established industrialised countries in all global publications have markedly decreased in favour of the BRIC countries (C 6–1). On a medium to long-term basis, this trend also applies to Germany. Furthermore, it is particularly striking that over the past decade, China's share has more than doubled and that currently only scientists in the USA publish more than scientists in China.⁴⁰³

In 2009, scientists in Switzerland, the Netherlands, Denmark and the United States succeeded in placing their publications particularly in scientific journals with an international audience (C 6–2) and in writing publications that were relatively frequently cited (C 6–3). This is something that scientists in the BRIC countries achieve only rarely. Yet, when compared with 2001, the BRIC countries have also been catching up in this respect; China and India in particular. As regards Germany's research performance, these two indicators currently point to an increase in the number of publications in scientific journals with worldwide visibility, but also to a poorer positioning in the journal-specific scientific regard of publications.

Shares of selected countries and regions for Web of Science publications in 2001 and 2011 (figures in percent)

C 6-1

In order to take account of changes in the collection of publication data – continuous expansion in particular – countries' shares of publications, and not absolute numbers of publications, are considered here.

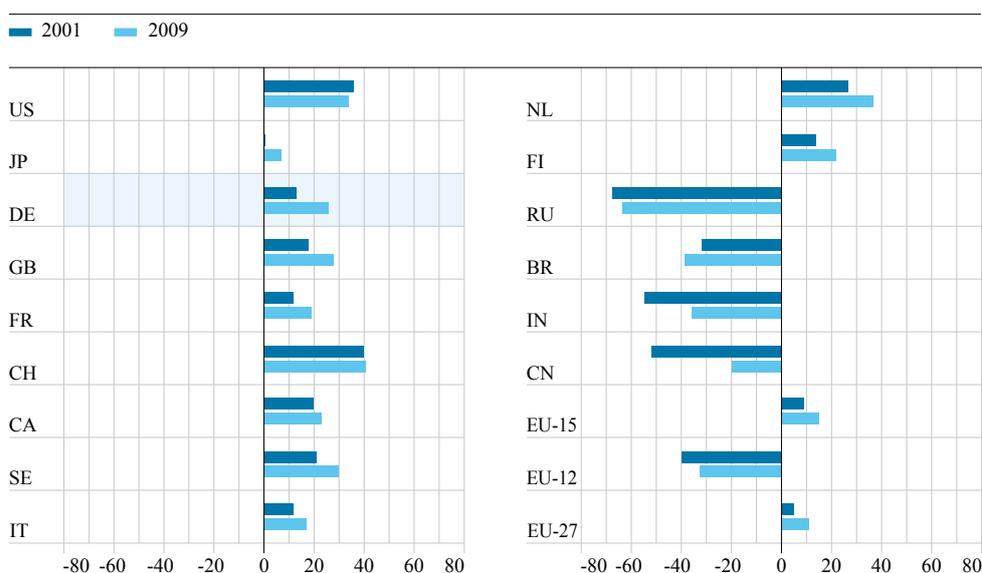


Source: Web of Science (WoS). Research and calculations by Fraunhofer ISI.

International alignment of selected countries and regions for Web of Science publications in 2001 and 2009 (index values)

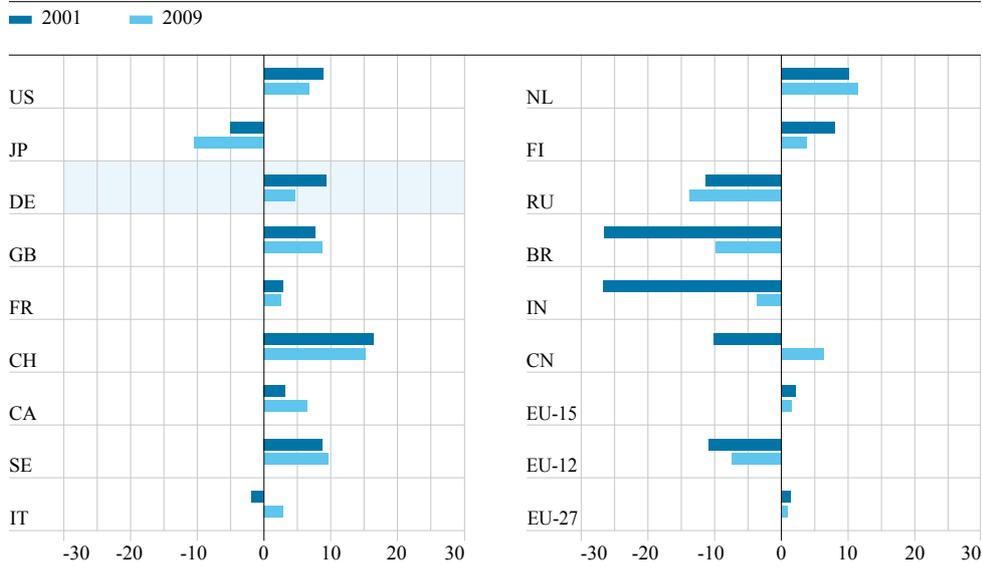
C 6-2

The international alignment (IA) index shows the extent to which a country's authors, in comparison to the world average, are publishing in internationally renowned journals and less-renowned journals. Positive values are indicative of above-average international alignment; negative values are indicative of below-average international alignment.



Source: Web of Science (WoS). Research and calculations by Fraunhofer ISI.

C 6-3 Scientific regard for Web of Science publications from selected countries and regions in 2001 and 2009 (index values)



The scientific regard (SR) index shows whether a country's scientific articles are cited more or less frequently than average articles in specific journals. Positive values are indicative of above-average SR; negative values are indicative of below-average SR. Index calculations do not include self-citations.

Source: Web of Science (WoS). Research and calculations by Fraunhofer ISI.